

Mechanics of Materials in Petroleum Industry

Calendar: 4TH day semester

Contact Hours: TP 60,0h; OT 15,0 h

Scientific Area: Mechanics and structures

Intended learning outcomes (knowledge, skills and competences to be developed by the students):

It is intended that after the attendance of this course unit, students acquire skills and competences in the subject of Mechanics of Materials in Oil and Gas industry: (i) Stresses, strains and displacements of linear elements and thin-walled under bending loading and shear force; (ii) Yield criteria in problems with composite efforts; (iii) Structural materials fatigue; (iv) General concepts about life cycle assessment.

Syllabus:

1. Pure bending.
2. Shear strength in thin-walled sections.
3. Yield criteria.
4. Structural materials fatigue.
5. Introduction to life cycle assessment

Evidence of the syllabus coherence with the curricular unit's intended learning outcomes:

Syllabus just fit to learning outcomes exhibited by the following correspondence: 1 and 2 with i); 3 with ii); 4 with iii); 5 with iv).

References:

Beer, F. P.; Johnston, E. R.; Eisenberg, E. R. – Mecânica Vectorial Para Engenheiros. Estática. McGraw-Hill de Portugal, Sétima edição, 2006.

Chen, W.-F., Saleeb, A. - Constitutive equations for engineering materials. Studies in Applied Mechanics, 37. Volume 1, Elasticity and modeling. Elsevier, 2nd revised edition, 1994. Amsterdam.

Chen, W.-F., Saleeb, A. - Constitutive equations for engineering materials. Studies in Applied Mechanics, 37. Volume 2, Plasticity and modeling. Elsevier, 2nd revised edition, 1994. Amsterdam.